

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS							
Bankclimber, purple	<i>Elliptordeus sloatianus</i>	U.S.A. (AL, FL, GA)	NA	T		NA	NA
Moccasinshell, Gulf	<i>Medionidus pencillatus</i>	U.S.A. (AL, FL, GA)	NA	E		NA	NA
Moccasinshell, Ochlockonee	<i>Medionidus simpsonianus</i>	U.S.A. (FL, GA)	NA	E		NA	NA
Pigtoe, oval	<i>Pleurobema pyriforme</i>	U.S.A. (AL, FL, GA)	NA	E		NA	NA
Pocketbook, shiny-rayed	<i>Lampsilis subangulata</i>	U.S.A. (AL, FL, GA)	NA	E		NA	NA
Slabshell, Chipola	<i>Elliptio chipolaensis</i>	U.S.A. (AL, FL)	NA	T		NA	NA
Three-ridge, fat	<i>Amblema neisleri</i>	U.S.A. (FL, GA)	NA	E		NA	NA

Dated: July 19, 1994

Mollie H. Beattie

Director, Fish and Wildlife Service.

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Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AC 62

Endangered and Threatened Wildlife and Plants; Proposed Rule to List the Arkansas River Basin Population of the Arkansas River Shiner as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to list the Arkansas River basin population of the Arkansas River shiner (*Notropis girardi*) as an endangered species under the authority of the Endangered Species Act of 1973 (Act), as amended. The Arkansas River shiner is a small fish found in the Canadian (South Canadian) River in New Mexico, Oklahoma, and Texas; and the Cimarron River in Kansas and Oklahoma. A non-native, introduced population occurs in the Pecos River in New Mexico; however, protection for this population is not under consideration. The Arkansas

River basin population is threatened by habitat destruction and modification from stream dewatering or depletion due to diversion of surface water and excessive groundwater pumping, water quality degradation, and construction of impoundments. Incidental capture of the Arkansas River shiner during pursuit of commercial bait fish species, and competition with the introduced Red River shiner (*Notropis bairdi*) may also contribute to reduced population sizes. This proposal, if made final, will implement Federal protection provided by the Act for *Notropis girardi*. Critical habitat is prudent but not currently determinable.

DATES: Comments from all interested parties must be received by October 3, 1994. Public hearing requests must be received by September 19, 1994.

ADDRESSES: Comments and materials concerning this proposal should be sent to: Field Supervisor, Ecological Services Field Office, 222 South Houston, Suite A, Tulsa, Oklahoma 74127. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Ken Collins at the above address (918/581-7458).

SUPPLEMENTARY INFORMATION:

Background

The Arkansas River shiner was first discovered by A. I. Ortenburger in 1926 in the Cimarron River northwest of Kenton, Cimarron County, Oklahoma (Hubbs and Ortenburger 1929). The Arkansas River shiner is a small, robust shiner with a small, dorsally flattened head, rounded snout, and small subterminal mouth (Miller and Robison 1973, Robison and Buchanan 1985). Adults attain a maximum length of 51 millimeters (mm) (2 inches (in)). Dorsal, anal, and pelvic fins all have eight rays and there is usually a small, black chevron present at the base of the caudal fin. Dorsal coloration tends to be light tan, with silvery sides gradually grading to white on the belly. The Arkansas River shiner historically inhabited the main channels of wide, shallow, sandy-bottomed rivers and streams of the Arkansas River Basin. Adults are uncommon in quiet pools or backwaters, and almost never occur in tributaries having deep water and bottoms of mud or stone (Cross 1967).

Adults prefer to orient into the current on the "lee" sides of transverse sand ridges and feed upon organisms washed downstream (Cross 1967). Their food habits have not been recorded but their principal food items are presumed to be small aquatic invertebrates (Gilbert 1978) or plankton (Sublette *et al.* 1990). The Arkansas River shiner spawns in

July, usually coinciding with flood flows following heavy rains (Moore 1944). The pelagic eggs drift with the swift current and hatching occurs within 24–48 hours. The larvae are capable of swimming within 3–4 days; they then seek out backwater pools and quiet water at the mouths of tributaries where food is more abundant (Moore 1944). Both Moore (1944) and Cross (1967) inferred that this species will not spawn unless conditions are favorable to the survival of the larvae.

Maximum longevity is unknown, but Moore (1944) speculated that the species' life span is likely less than 3 years (age class II) in the wild. The age structure of Arkansas River shiners collected from the Pecos River in New Mexico included three, and possibly four, age classes (Bestgen *et al.* 1989). The majority of the fish captured were juveniles (age class 0) and first-time spawners (age class I). Most of the fish in spawning condition were age class I. Bestgen *et al.* (1989) thought mortality of post-spawning fish was extremely high based on the absence of age class I and older fish from collections made after the spawning period (late July and August).

Historically, the Arkansas River shiner was widespread and abundant throughout the western portions of the Arkansas River Basin in Kansas, New Mexico, Oklahoma, and Texas. There is one record from the Arkansas River at the mouth of Piney Creek in Logan County, Arkansas (Black (1940), as cited in Robison and Buchanan (1988)). A record (one individual) also exists for the Red River Basin in Oklahoma (Cross 1970), possibly originating from a release of bait fish by anglers. Within the last 20 years, this species has disappeared from over 80 percent of its historic range and is now almost entirely restricted to the Canadian (South Canadian) River in Oklahoma, Texas, and New Mexico. A non-native population of the Arkansas River shiner has become established in the Pecos River of New Mexico within the last 15 years (Bestgen *et al.* 1989).

Recent surveys for the Arkansas River shiner were conducted at 155 localities within the Arkansas River Basin (Larson *et al.* 1991). Fish collections were made at 128 of 155 localities; the remaining 27 sites were dry. The surveys resulted in the capture of 1,455 Arkansas River shiners from 23 localities: 14 in Oklahoma, 5 in Texas, and 4 in New Mexico. No Arkansas River shiners were captured in Kansas. The decline of this species throughout its historic range may primarily be attributed to inundation and modification of stream discharge by impoundments, channel

desiccation by water diversion and excessive groundwater pumping for agriculture, stream channelization, and introduction of non-native species.

The Arkansas River shiner began to decline in the Arkansas River in western Kansas prior to 1950 due to increasing water diversions for irrigation and completion of John Martin Reservoir in 1942 (Cross *et al.* 1985). The Arkansas River from Coolidge to near Great Bend, Kansas, is frequently dewatered (Cross *et al.* 1985). Habitat alteration following construction of Kaw and Keystone reservoirs on the Arkansas River in Oklahoma, in conjunction with completion of the McClellan-Kerr Navigation System in 1970, greatly reduced Arkansas River shiner habitat in Oklahoma and Arkansas. The Arkansas River shiner no longer occurs in the Arkansas River in Arkansas, Kansas, and Oklahoma.

The Arkansas River shiner was once common throughout the Cimarron River and its tributaries (Pigg 1991). The abundance of the Arkansas River shiner in the Cimarron River declined markedly after 1964 (Felleys and Cothran 1981). In 1976, the Red River shiner (*Notropis bairdi*) was first recorded from the Cimarron River (Marshall 1978). Since that time, the Red River shiner has essentially replaced the Arkansas River shiner. Habitat alteration and resulting flow modification also contributed to the decline of the species from the Cimarron River. A small, remnant population may still persist in the Cimarron River, based on the collection of nine individuals since 1985.

The Arkansas River shiner was first reported from the North Canadian (Beaver) River drainage in 1926 (Hubbs and Ortenburger 1929). Collections between 1947 and 1976 indicated that the Arkansas River shiner occurred in large numbers in the river and some larger tributaries despite the construction of Optima and Canton reservoirs (Pigg 1991). This fish was still sporadically collected from the North Canadian River until 1987. Several collection attempts at 15 localities over the next 2 years failed to capture any Arkansas River shiners (Pigg 1991). In 1990, four specimens were collected from the river south of Turpin, Beaver County, Oklahoma (Larson *et al.* 1991; Jimmie Pigg, Oklahoma Department of Health, pers. comm., 1993). Commercial bait dealers were observed flushing their tanks in the vicinity of the site where the Arkansas River shiners were captured and may have been responsible for the unintentional release of this species back into the North Canadian River. The species has not

been captured from the North Canadian River since 1990 (J. Pigg, pers. comm. 1993).

Historically, the species occurred in the Canadian (South Canadian) River from its confluence with the Arkansas River near Sallisaw, Sequoyah County, Oklahoma as far upstream as the Sabinoso area in central San Miguel County, New Mexico (Pigg 1991, Sublette *et al.* 1990). Construction and operation of Ute and Conchas reservoirs in New Mexico, Lake Meredith in Texas and Eufaula Reservoir in Oklahoma altered or eliminated sections of riverine habitat and diminished the range of Arkansas River shiners within the Canadian River. Eufaula Reservoir isolated Canadian River populations from the Arkansas River and, in combination with Lake Meredith and Ute Reservoir, confined Arkansas River shiners to two restricted segments of the Canadian River, one between Ute Dam and the upper reaches of Lake Meredith, and the other below Lake Meredith to the upper reaches of Eufaula Reservoir. The reservoirs function as barriers, significantly inhibiting dispersal and interchange between the two segments.

A non-native population of Arkansas River shiners has become established in the Pecos River in New Mexico, presumably originating from the release of bait fish downstream of Sumner Dam in 1978 (Bestgen *et al.* 1989). The species is presently known to occupy a portion of the Pecos River extending from Ft. Sumner to Carlsbad, New Mexico. The largest populations, based on the number of fish collected, occur in the vicinity of Lake Arthur Falls. Natural flow patterns in the Pecos River have been altered by reservoir releases and irrigation withdrawals and return flows. Flow regimes in the Pecos River now mimic the intermittent flows formerly present within areas historically supporting natural populations of Arkansas River shiners, and are presently serving to maintain habitat and provide discharge pulses necessary for reproduction and survival of this population (Bestgen *et al.* 1989). As demand for water increases in New Mexico, the success of this artificial population may decline or the population may cease to exist. Protection of this artificial population would also conflict with efforts to manage native fish populations in the Pecos River. The Pecos River supports populations of the federally threatened Pecos bluntnose shiner (*Notropis simus pecosensis*) and once supported the proposed federally endangered Rio Grande silvery minnow (*Hybognathus amarus*). The establishment of Arkansas River shiners in the Pecos River is a

potential threat to the Pecos bluntnose shiner (U.S. Fish and Wildlife Service 1992). Recovery of the native fish fauna of the Pecos River may eventually require restoration of historic flow conditions and eradication of competitive, non-native fishes such as the Arkansas River shiner. Management and recovery efforts for the Pecos bluntnose shiner and other fish species native to the Pecos River will focus on the preservation of native species to the detriment of the Arkansas River shiner population. Listing and protection of the Pecos River population of the Arkansas River shiner would conflict with the preservation of the Pecos bluntnose shiner and possibly the Rio Grande silvery minnow. While the Pecos River population may be important in efforts to supplement natural, native populations within the historic range of the species, protection of this artificial population would not improve the status of the Arkansas River shiner within its historic range. Therefore, the Service is not proposing to list the introduced population in the Pecos River.

The Arkansas River shiner first received listing consideration when the species was included in the September 13, 1985, Review of Vertebrate Wildlife (50 FR 37958) as a category 2 candidate for listing. Category 2 comprises taxa for which information indicates that a proposal to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threats are not currently available to support proposed rules. A January 6, 1989, revised Animal Notice of Review (54 FR 554) retained this status for the Arkansas River shiner. Detailed information on the status of the species was first provided to the Service in 1989 by Pigg (1989). Additional information on the status of this species was obtained through a partial status survey by Larson *et al.* (1990). The Service subsequently prepared a status report on this species (U.S. Fish and Wildlife Service 1990). In the November 21, 1991, Animal Candidate Review for Listing as Endangered or Threatened Species (56 FR 58804), the Arkansas River shiner was reclassified as a category 1 candidate. Category 1 comprises taxa for which the Service has substantial information on biological vulnerability and threats to support proposals to list the taxa as endangered or threatened. Additional status survey information was provided in Larson *et al.* (1991) and Pigg (1991).

Summary of Factors Affecting the Species

Section 4(a)(1) of the Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal "List of Endangered and Threatened Wildlife and Plants". A species may be determined to be an endangered or threatened species due to one or more of the five factors described in Section 4(a)(1). These factors and their application to the Arkansas River basin population of the Arkansas River shiner (*Notropis girardi*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Once abundant and widely distributed throughout the Arkansas River basin, the Arkansas River shiner now inhabits about 20 percent of its historic range. Navigation improvements on the Arkansas River by the U.S. Army, Corps of Engineers (Corps) began in Arkansas in 1832, 4 years before Arkansas gained statehood (Corps of Engineers 1989). Initially, construction projects generally consisted of small improvements, such as clearing and snagging operations, until passage of the River and Harbor Act in 1946 authorized construction of the McClellan-Kerr Navigation System from the Mississippi River upstream to Catoosa, Oklahoma. Project construction began in the 1950's and intensified during the 1960's. Project segments from the Mississippi confluence upstream to Fort Smith, Arkansas, were completed by 1969. By 1970, the channel had been extended up the Arkansas River as far as Muskogee, Oklahoma, and was essentially complete. The project included numerous bank stabilization and channel rectification projects, 17 locks and dams (12 in Arkansas), annual channel maintenance, and port facilities. Several of the locks and dams are multipurpose facilities, providing peak power generation. The Corps maintains a minimum channel depth of 3 meters (m) (9 feet (ft)) and minimum width of 76 m (250 ft). These modifications have eliminated suitable habitat and are presumably responsible for the extirpation of the Arkansas River shiner within the State of Arkansas and contributed to the decline of the species in Oklahoma. Buchanan (1976) failed to collect any Arkansas River shiners from the Arkansas River Navigation System in Arkansas, and fish collections between 1972 and 1988 from the Arkansas River near Ft. Smith, Arkansas also failed to produce any Arkansas River shiner specimens (Robison and Buchanan 1988). Arkansas River shiners

were last observed within the Arkansas River downstream of Muskogee in 1985 (Pigg 1991).

Numerous multipurpose impoundments, including three mainstem reservoirs on the Arkansas River and four mainstem reservoirs on the Canadian River, have been constructed within the Arkansas River Basin. These impoundments have inundated, dewatered, or otherwise altered considerable sections of riverine habitat once inhabited by Arkansas River shiners. Inundation has eliminated Arkansas River shiner spawning habitat, isolated populations, and favored an increased abundance of predators. Water releases from impoundments may be infrequent or non-existent, resulting in dewatering of stream sections downstream of the reservoir. Where sufficient water is released to maintain downstream flows, the releases generally alter the natural flow regime for considerable distances downstream of the impoundment, establishing a stream environment unlike that which existed under pre-impoundment conditions. Physical changes resulting from altered flows may include modifications to water velocity, wetted perimeter (amount of streambed exposed to water at any given flow), water depth, streambed and bank erosion, and suspension and distribution of bed and bank sediments.

In 1952, the Arkansas River shiner was believed to inhabit the entire Arkansas mainstem in Kansas, but was already suspected to be declining due to the construction of John Martin Reservoir 10 years earlier on the Arkansas River in Bent County, Colorado (Cross *et al.* 1985). By 1960, the species had disappeared from the Arkansas River mainstem west of Wichita, Kansas, and was absent from the entire Kansas portion of the Arkansas mainstem by 1983 (Cross *et al.* 1985).

Arkansas River shiners were apparently abundant in the Arkansas River near Tulsa, Oklahoma, prior to construction of Keystone Reservoir in 1964 (Pigg 1991). Following the addition of hydropower at Keystone Dam in 1968, the resultant flow alterations severely depleted Arkansas River shiner populations. The Arkansas River shiner was last observed from the section of the Arkansas River between Keystone Reservoir and Muskogee, Oklahoma, in 1982. Kaw Reservoir, another Arkansas River mainstem impoundment, located upstream of Keystone Reservoir, became operational in 1976. In 1989, hydropower was added to Kaw Dam. Shiners were last

observed downstream of Kaw Reservoir in 1986 (Larson *et al.* 1991, Pigg 1991).

On the Canadian River, Lake Meredith and Eufaula Reservoir have impacted the Arkansas River shiner. Prior to completion of Eufaula Reservoir, Arkansas River shiners were abundant in the Canadian River between the proposed dam site and the Arkansas River (Pigg 1991). Arkansas River shiners have not been collected from this reach of the Canadian River since the reservoir became operational in 1964. The disappearance of Arkansas River shiners below Eufaula Reservoir has been attributed to rapid water level fluctuations occurring during hydropower generation and altered conditions favoring an abundant predatory fish population (Pigg 1991). Lake Meredith was constructed by the Bureau of Reclamation in 1965 and conservation storage is presently managed by the Canadian River Municipal Water Authority. Releases from Lake Meredith are infrequent to non-existent (Williams and Wolman 1984) and have considerably altered flows in the Canadian River downstream of the reservoir.

Historically, discharge at Canadian, Texas, located 121 kilometers (km) (75 miles (mi)) below Lake Meredith, averaged 15.5 cubic meters per second (549 cubic ft per second (cfs)); however, following completion of the reservoir, annual discharge has averaged only 2.5 cubic meters per second (87.7 cfs) (Buckner *et al.* 1985). Principal sources of water to the Canadian River below Lake Meredith are sewage effluent, tributary inflow, and groundwater emergence.

Reduced flows below Lake Meredith have considerably altered the morphology of the Canadian River and have reduced the extent of suitable habitat for Arkansas River shiners. Stinnett *et al.* (1988) examined a 370 km (230 mi) stretch of the Canadian River and associated floodplain 72,843 hectares (179,995 acres) between the western Oklahoma border and the western Pottawatomie County line near Norman, Oklahoma. Quantification of wetland areas between 1955 and 1984 revealed that the amount of riverine wetlands (shoreline and open water) had decreased by about 50 percent. Sandbar acreage alone had been reduced by 54 percent. Wetland and associated floodplain changes were principally the result of hydrological modifications due to the influence of Lake Meredith (Stinnett *et al.* 1988). The lack of significant scouring flows permitted the encroachment of vegetation within the channel, reducing channel width by almost 50 percent since 1955. Although

Arkansas River shiners persist in the Canadian River downstream of Lake Meredith, the reduction in available habitat has likely suppressed shiner populations. Habitat alterations associated with reduced flows downstream of Lake Meredith are considered to be a significant, ongoing threat to the continued existence of the Arkansas River shiner within the Canadian River.

Other mainstem impoundments within the historic range of Arkansas River shiner include Ute and Conchas reservoirs on the upper Canadian River, Optima and Canton reservoirs on the North Canadian River, and Great Salt Plains Reservoir on the Salt Fork of the Arkansas River. Arkansas River shiner populations persist only below Ute Reservoir (Larson *et al.* 1991, Pigg 1991).

Groundwater is an extremely important source of water in western Oklahoma, western Kansas, and the Texas panhandle (Stoner 1985, Texas Department of Water Resources 1984, Oklahoma Water Resources Board 1980, 1990). Withdrawals from western Oklahoma aquifers account for about 80 percent of the State's total groundwater usage (Oklahoma Water Resources Board 1990). Irrigation of croplands has diverted surface water and lowered groundwater tables throughout southwestern Kansas and northwestern Oklahoma. Water tables receded from 3 m (10 ft) to more than 30 m (100 ft) over much of southwestern Kansas during the period from 1950 to 1975 (Cross *et al.* 1983). Between 1955 and 1980, declines in water levels by as much as 31 m (102 ft) have been recorded in the Ogallala Aquifer in Oklahoma (Oklahoma Water Resources Board 1980). In 1960, there were about 400 groundwater wells in the Oklahoma panhandle; by 1965 the number had risen to 975; and in 1974, the number of wells had risen to 2,067 (Oklahoma Water Resources Board 1980). By 1988, there were an estimated 3,200 high capacity wells overlying the Ogallala Aquifer in western Oklahoma alone (Oklahoma Water Resources Board 1990). At present, rainfall and runoff contribute little recharge to the underlying aquifers. In Texas, withdrawals of groundwater in the Canadian River Basin were as much as 33 times higher than the annual natural recharge in 1980, and irrigation return flows in the Basin are negligible (Texas Department of Water Resources 1984). When groundwater is pumped faster than it is restored, water tables drop, channel seepage ceases, and streams cease to flow. Under these conditions, suitable habitat to support Arkansas

River shiner populations is non-existent.

Surface water withdrawals constitute a small percentage of the total water used within the western sections of the historic range of the Arkansas River shiner, primarily because of the limited number of impoundments and elevated levels of chlorides. However, natural flows in the Cimarron River upstream of Waynoka, Oklahoma, are affected by several diversions for irrigation. Dewatering and reduced base flows because of groundwater and surface water withdrawals is considered a significant, ongoing threat to the Arkansas River shiner in southwestern Kansas, northwestern Oklahoma and the Texas panhandle (Larson *et al.* 1991, Cross *et al.* 1985).

Water quality in the Canadian River in Texas generally declines as the river flows eastward. The Canadian River traverses oil and gas producing areas and receives municipal sewage effluent and manufacturing return flows, all of which degrade water quality (Texas Department of Water Resources 1984). Water quality degradation is believed to have suppressed Arkansas River shiner populations within affected reaches of the Canadian River. Water quality within the Canadian River begins to improve as the river flows through the sparsely populated counties in western Oklahoma. Poor water quality in the North Canadian River near Oklahoma City and in the Arkansas River at Tulsa are also believed to have contributed to localized declines in Arkansas River shiner populations. The North Canadian River from western Oklahoma City downstream to Eufaula Reservoir is considered to be the most nutrient-enriched stream in Oklahoma (Pigg *et al.* 1992). The Arkansas River shiner has not been found in this section of the North Canadian River since 1975 (Pigg 1991).

The proposed Lake Meredith Salinity Control Project is designed to control brine seeping into the Canadian River from a brine aquifer in New Mexico. The project could have an effect on the quantity and quality of flow in the Canadian River between Ute Dam near Logan, New Mexico and Lake Meredith in Texas. The impacts of this project on Arkansas River shiner populations have not yet been determined. Arkansas River shiner populations in this 219 km (136 mi) reach of the Canadian River are isolated from other populations by Ute and Meredith reservoirs. Flow reductions in this reach could severely deplete, or possibly extirpate, these populations.

B. Overutilization for commercial, recreational, scientific, or educational

purposes. Though not selectively harvested as a bait species, the inadvertent collection of Arkansas River shiners during harvest of commercial bait species may limit population growth. While some harvest of bait species, either for commercial or personal consumptive uses, occurs in New Mexico and Texas, the greatest threat to Arkansas River shiner from overutilization occurs in the State of Oklahoma.

In 1985, the Cimarron and South Canadian rivers produced over 55 percent of the bait fish harvested in Oklahoma, providing over 20,846 kilograms (kg) (45,958 pounds (lbs)) of fish (Peterson 1986). Plains minnow (*Hybognathus placidus*), which may reach total lengths of 127 mm (5 in), was the primary species reported harvested by the commercial minnow dealers. In 1991, the Cimarron and South Canadian rivers produced over 50 percent of the bait fish harvested in Oklahoma, providing over 25,118 kg (55,376 lbs) of fish (Peterson 1992). Plains minnow was again reported to be the primary species harvested. Although the percent of the total poundage harvested from the Cimarron and South Canadian rivers has declined slightly since 1985, the amount, by weight, of fish harvested has increased by over 20 percent. Within the last 10 years (1980–81 to 1991), the percent of the total harvest taken from the South Canadian and Cimarron rivers has varied from 67 percent in 1982 (Peterson and Weeks 1983) to 46 percent in 1989 (Larson *et al.* 1991). The amount of fish taken varied from over 37,762 kg (83,252 lbs) in 1982 to 19,147 kg (42,213 lbs) in 1989. The lists of species harvested did not include Arkansas River shiners.

Larson *et al.* (1991) reported that there is no evidence that the species has been adversely affected by the commercial harvest of bait fish. The reported capture of predominantly large species (plains minnows) and the continued existence of the Arkansas River shiner in the South Canadian River, the drainage supporting the majority of the harvest, was the primary evidence used in arriving at this conclusion. Larson *et al.* (1991) suggested that slender-bodied fishes such as the Arkansas River shiner would constitute only a small percentage of the commercial harvest, assuming the commercial bait industry used large-mesh seines as the major mode of capture. However, other evidence indicates that the Arkansas River shiner, while perhaps not a highly sought commercial species, is being affected by the commercial bait industry.

The rapid establishment of the Arkansas River shiner in the Pecos River, presumably from the release of bait fish, indicates that a large number of fish were released in a single event. Otherwise, if Arkansas River shiners occur only occasionally in the commercial harvest, several releases over a short period of time would be required to ensure that a large enough population existed to facilitate natural reproduction. In either instance, the evidence would indicate that shiners may occasionally occur in commercial catches in fairly large numbers. The capture of four individuals in the North Canadian River in 1990 also suggests that Arkansas River shiners are occasionally being harvested by commercial bait dealers.

Lists of fish species reported captured by commercial bait dealers are not always accurate and likely fail to report the capture of Arkansas River shiners. Based on the large percentage of golden shiners (*Notemigonus crysoleucas*) reported captured by commercial bait dealers in 1989, Larson *et al.* (1991) believed the list to be suspect, since no locality was encountered in their collections where golden shiners comprised such a high proportion. In 1982, Peterson and Weeks (1983), stated that the river shiner (*Notropis blennioides*) was the primary species harvested by commercial bait dealers in the seven river drainages for which they had data (South Canadian, North Canadian, Red, Salt Fork of Red, North Fork of Red, Salt Fork of Arkansas, and Cimarron rivers). However, the river shiner has not been recorded from the South Canadian, North Canadian, Salt Fork of Red, or North Fork of Red rivers (Miller and Robison 1973). Larson *et al.* (1991), in their survey for Arkansas River shiners, also did not report capturing a single river shiner from 128 sampling localities within the Arkansas River basin.

Information provided by the commercial bait industry cannot reliably be used as evidence to suggest that commercial bait harvest is not impacting Arkansas River shiner populations. The sheer numbers of fish collected from the South Canadian River would imply that Arkansas River shiners could constitute a considerable percentage of the by-catch taken during commercial harvest. While there is no conclusive evidence to suggest that commercial harvest has contributed to the decline of the Arkansas River shiner, take of this species during commercial bait harvest may be significant and suggests that the effect of this factor warrants further investigation.

C. *Disease or predation.* No studies have been conducted on the impact of

disease or predation upon the Arkansas River shiner; therefore, the significance of these threats upon existing populations is unknown. There is no direct evidence to suggest that disease threatens the continued existence of the species. Disease is not likely to be a significant threat except under certain habitat conditions, such as crowding during periods of reduced flows, or episodes of poor water quality, such as low dissolved oxygen or elevated nutrient levels. During these events, stress reduces resistance to pathogens and disease outbreaks may occur. Parasites and bacterial and viral agents are generally the most common causes of mortality. Lesions caused by injuries, bacterial infections, and parasites often become the sites of secondary fungal infections.

Some predation of Arkansas River shiners by largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), and other species undoubtedly occurs, but the extent is unknown. Plains fishes have evolved under adverse conditions of widely fluctuating, often intermittent flows, high summer temperatures, high rates of evaporation, and high concentrations of dissolved solids. These conditions are not favored by most large predaceous fish and tend to preclude existence of significant populations of these species. However, alteration of historic flow regimes and construction of reservoirs have created favorable conditions for some predatory species such as white bass (*Morone chrysops*) and striped bass (*M. saxatilis*). State and Federal fish and wildlife management agencies, through efforts to develop sport fisheries in these reservoirs, have facilitated the expansion of some predatory species. The impact of predation is likely to be localized and insignificant, particularly where habitat conditions upstream of mainstem reservoirs are not favorable to the long-term establishment of large populations of predatory fish.

D. *The inadequacy of existing regulatory mechanisms.* The State of Kansas lists the Arkansas River shiner as a State endangered species. The Kansas Department of Wildlife and Parks has designated portions of the mainstem Cimarron, Arkansas, South Fork Neosho, and Neosho rivers as critical habitat for the shiner (Vernon Tabor, U.S. Fish and Wildlife Service, Kansas State Office, pers. comm., 1993). A permit is also required for public actions that have the potential to destroy listed individuals or their critical habitat. Subject activities include any publicly funded or State or federally assisted action, or any action

requiring a permit from any other State or Federal agency. Violation of the permit constitutes an unlawful taking, a Class A misdemeanor, and is punishable by a maximum fine of \$2,500 and confinement for a period not to exceed one year (V. Tabor, pers. comm., 1993). Kansas does not permit the commercial harvest of bait fish from rivers and streams within the State.

The State of New Mexico lists the Arkansas River shiner as a State endangered species. This listing prohibits the taking of the Arkansas River shiner without a valid scientific collecting permit but does not provide habitat protection. The State of Oklahoma lists the Arkansas River shiner as a State threatened species, but, as in New Mexico, this listing does not provide habitat protection. The States of Arkansas and Texas provide no special protection for the species or its habitat.

While Kansas, New Mexico, and Oklahoma protect the Arkansas River shiner from take and/or possession, only Kansas addresses the problem of habitat destruction or modification. None of the States provide significant protection from the potential introduction of competitive species. Listing under the Act would provide additional protection and encourage active management through "Available Conservation Measures" discussed below.

E. *Other natural or manmade factors affecting its continued existence.* The overall trend in the status of this species is characterized by dramatic declines in numbers and distribution. The apparent isolation of self-sustaining populations of Arkansas River shiners to one river system renders the remaining populations extremely vulnerable to any natural or manmade factors that might further reduce population size. The occurrence of a single, catastrophic event, such as the introduction of competitive species, or a prolonged period of low or no flow, would significantly increase the likelihood of extinction.

The introduction and establishment of the Red River shiner, a species endemic to the Red River Drainage, into the Cimarron River in Oklahoma and Kansas has had a detrimental effect on the Arkansas River shiner (Cross *et al.* 1983, Felley and Cothran 1981). The Red River shiner was first recorded from the Cimarron River in 1976 (Marshall 1978). The Red River shiner has since colonized the Cimarron River and frequently may be a dominant component of the fish community (Cross *et al.* 1983, Felley and Cothran 1981). The morphological characteristics, population size, and ecological preferences exhibited by the

Red River shiner suggest that competition for food and other essential life requisites occurs with Arkansas River shiners (Cross *et al.* 1983, Felley and Cothran 1981). The unintentional release of Red River shiners, or other potential competitors, into the Canadian River by anglers or the commercial bait industry is a potentially serious threat and could lead to decimation or extirpation of the remaining natural Arkansas River shiner populations.

The limited occurrence of Red River pupfish (*Cyprinodon rubrofluviatilis*) in the Canadian River drainage since 1969 (Pigg *et al.* 1984) indicates that the release of at least one Red River endemic has already occurred in this drainage. While the introduction of non-native fish does not fully account for the disappearance of Arkansas River shiners, particularly outside of the Cimarron River, competition with introduced species can have a significant adverse impact on Arkansas River shiner populations.

The reproductive characteristics and specialized spawning and early life-history requirements of this species intensify the effects of certain natural or manmade factors, such as drought. Successful reproduction of the Arkansas River shiner appears to require precise flow conditions conducive to breeding and embryonic development. Spawning is triggered, in part, by abrupt increases in stream flow during the late spring or summer (Cross *et al.* 1983, Moore 1944). Stream flows favorable to spawning must be sustained over at least a 24 hour period to ensure complete embryonic and larval development. As discussed under Factor A, suitable habitat conditions are becoming scarce and where conditions are not favorable, rapid population declines have occurred.

Declining populations of the Arkansas River shiner may also be due to poor survival of juveniles. Bestgen *et al.* (1989) observed that spawning in Arkansas River shiners appeared to be primarily limited to age class I individuals, based on an absence of age class I and older fish from collections made after the spawning period. The apparent extremely high post-spawning mortality observed in Arkansas River shiner populations in the Pecos River suggests that the reproductive contribution of individuals in age class II or older is very limited. Thus, the continued existence of Arkansas River shiner populations may be almost entirely dependent upon successful annual reproduction and subsequent recruitment of age class 0 (juvenile) individuals into the population. The loss of a single reproductive event/cycle

would seriously reduce recruitment, and possibly lead to localized extinctions. The fragmentation of Arkansas River shiner habitat by impoundments intensifies the effects of failed reproduction by hindering repopulation following rapid declines or localized extinctions.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list the Arkansas River basin population of the Arkansas River shiner as endangered. Endangered status, which means that the species is in danger of extinction throughout all or a significant portion of its range, is appropriate for the Arkansas River shiner because of its significantly reduced range, including the apparent extirpation of the shiner in Arkansas, Kansas, and throughout much of its historic range in Oklahoma. Threatened status does not appear appropriate considering the extent of the species' population decline and the vulnerability of the remaining populations.

Critical Habitat

Section 4(a)(3) of the Act, requires that, to the maximum extent prudent and determinable, the Secretary propose critical habitat at the time the species is proposed to be endangered or threatened. The Service finds that designation of critical habitat is not presently determinable for this species. The Service's regulations (50 CFR 424.12(a)(2)) state that critical habitat is not determinable if information sufficient to perform required analyses of the impacts of the designation is lacking or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

Arkansas River shiners occur at scattered locations throughout the Canadian River. Specific habitat features, such as substrate composition, water depths, and water velocities, preferred by Arkansas River shiners are unknown and data explaining the distribution and abundance of Arkansas River shiners within a given segment of stream are lacking. Without this information, designation of critical habitat is not possible because the Service cannot adequately determine the precise constituent elements within specific areas that are essential to the survival and recovery of the Arkansas River shiner. The Service has initiated studies, funded under the provisions of Section 6(d) of the Act, which will determine and characterize the specific

physical habitat requirements of the Arkansas River shiner. Within 2 years from the date of publication of this proposed rule, the Service must designate critical habitat to the maximum extent prudent (50 CFR 424.17(b)(2)).

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and authorizes recovery plans for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

A number of Federal agencies have jurisdiction and responsibilities potentially affecting the Arkansas River shiner, and Section 7 consultation may be required in a number of instances. Federal involvement is expected to include the Bureau of Reclamation's proposed Lake Meredith Salinity Control Project and Corps of Engineers' multi-purpose reservoir operations throughout the Arkansas River Basin. The Corps of Engineers will also consider the Arkansas River shiner in administration of Section 404 of the Clean Water Act. The U.S. Environmental Protection Agency will

consider the Arkansas River shiner in the registration of pesticides, adoption of water quality criteria, and other pollution control programs. The U.S. Department of Transportation, Federal Highway Administration, will consider the effects of bridge and road construction at locations where known habitat may be impacted. The U.S. Department of Agriculture, Soil Conservation Service, will be required to consider the effects of structures installed under the Watershed Protection and Floodwater Prevention program. The U.S. Forest Service's management actions on the Cimarron and Kiowa National Grasslands may also require Section 7 consultation.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or to attempt any of these), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities.

Requests for copies of the regulations regarding listed wildlife and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico, 87103 (505/766-2914) and fax (505/766-8063).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) The location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by Section 4 of the Act;

(3) Additional information concerning the range, distribution, and population size of this species; and

(4) Current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulation on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal. Such requests must be made in writing and addressed to Field Supervisor, Tulsa, Oklahoma (see ADDRESSES above).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

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Author

The primary author of this proposed rule is Ken Collins, U.S. Fish and Wildlife Service (see ADDRESSES above).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under "FISHES," to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
FISHES							
Shiner, Arkansas River.	Notropis girardi	U.S.A. (AR, KS, NM, OK, TX).	Arkansas River basin (AR, KS, NM, OK, TX).	E	NA	NA

Dated: July 14, 1994.
Mollie H. Beattie,
Director, Fish and Wildlife Service.
 [FR Doc. 94-18924 Filed 8-2-94; 8:45 am]
 Billing Code 4310-55-p

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 222

[Docket No. 940685-4185; I.D. 072694A]

RIN 0648-AG74

**Endangered and Threatened Species;
 Proposed Endangered Status for North
 and South Umpqua River Cutthroat
 Trout in Oregon**

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and

Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; correction.

SUMMARY: In document 94-16577, published on July 8, 1994, (59 FR 35089), NMFS issued a proposed rule to list the Umpqua River cutthroat trout (*Oncorhynchus clarki*) as endangered under the Endangered Species Act of 1973 (ESA). A 30-day period for requesting a public hearing was published as ending on August 8, 1994. The correct period for requesting a public hearing is 45 days from the date of publication; therefore, the correct ending date is August 22, 1994.

DATES: Requests for a public hearing must be received by August 22, 1994.

FOR FURTHER INFORMATION CONTACT: Garth Griffin, Environmental and Technical Services Division, NMFS, Portland, OR (503/230-5430) or Marta

Nammack, Protected Species Management Division, NMFS, 1335 East-West Highway, Silver Spring, MD 20910 (301/713-2322).

Dated: July 28, 1994.

Gary C. Matlock,

Program Management Officer, National Marine Fisheries Service.

[FR Doc. 94-18814 Filed 8-02-94; 8:45 am]

BILLING CODE 3510-22-F